SSLC EXAMINATION MARCH 2013
MATHEMATICS – ANSWER KEY

1.f+2d=19
d=4
2nd term=15,4th term=23

2.p(x)=$3x^3-2x^2+kx-6$
if (x-2) is a factor
p(2)=0
k=-5

3.
OA=OB(tangents)
B(0,4)
OACB is a square
C(4,4)

4.
P(B)=1/3
P(B)=1*6/(3*6)
=6/18
Black beads=6
total=18

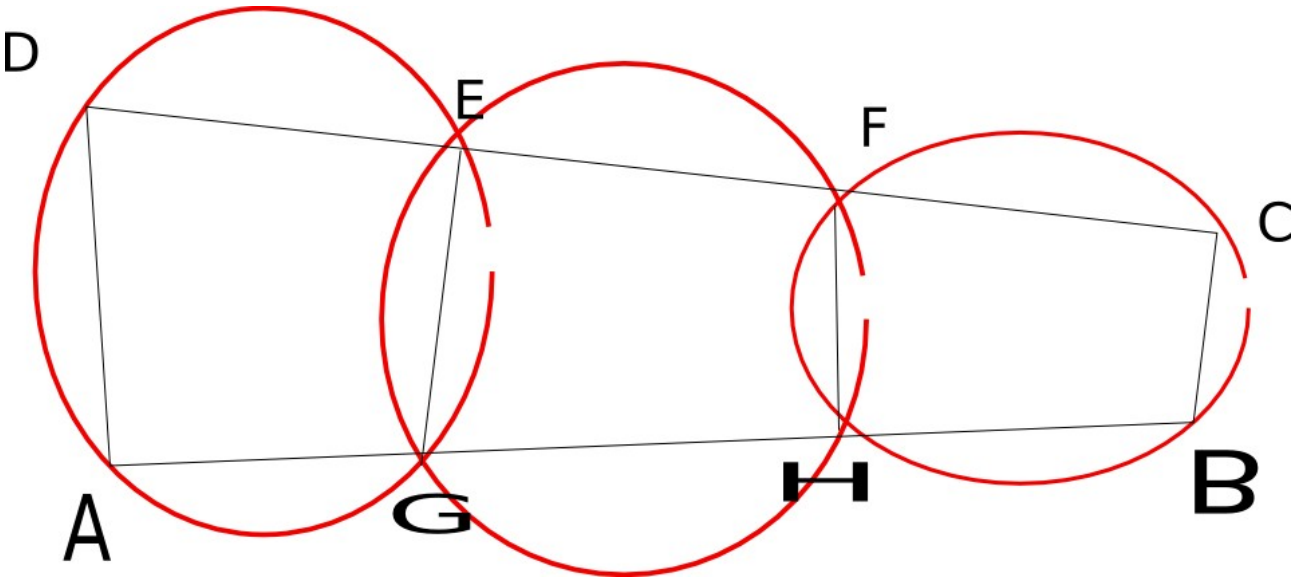
P(B)=1/4

number of white balls to be added=6

6/(18+6)=1/4

5.
Mean=4430/100=44.3

6.if O is center
<A=1/2<DOC
<B=1/2<EOD
<C=1/2<EOA
<D=1/2<AOB
<E=1/2<BOC
<A+<B+<C+<D+<E=1/2*360=180



Let <A=x,<D=y
<AGE=180-x,<DEG=180-y
<EGH=x,<FEG=y
<GHF=180-x,<EFH=180-y
<BHF=x,<CFH=y
<B=180-x,<C=180-y
<A+<C=180,<D+<B=180

7. distance between (2,4) (2,0) in not equal to radius
   ie circle do not pass through (2,0)

8.

if O is centre
<AOB=140
<P=70(1/2*140)
<A=<B=55(PA=PB)

9. $Sn=5n^2+2n$
   S1=7(first term=7)
   S2=5*4+2*2=24
   X_2=24-7=17
   terms 7,17

10. b=x
    h=x+6

Area=36
x(x+6)=72
x^2+6x+...=72
completing square
x^2+6x+9=72+9
$(x+3)^2$ =81
x+3=9
x=6 sides 6,12

11.
<A,<C,<B=45,45,90

AB,BC,AC=1:1:√2
BC=4
AC=4√2
AD=2√2
BD= 2√2(in a right angled triangle circum center is mid point of Hypotenuse)

12. b=12(e=12)
Area of one Lateral face=√3*12/12/4
=36√3
LSA=144√3
TSA=144+144√3
=144*(1+√3)

if edges are doubled
TSA=becomes 4 times(576*(1+√3)

13.

100-1=99
99 is a multiple of d(3)
Yes 100 is a term
nth term=1+(n-1)3
=1+3n-3
=3n-2
$(3n-2)^2 = 9n^2-12n+4$
$=3(3n^2-4n+1)+1$
=d*N+1
$(3n-2)^2$ -first term =common difference*N

14. Draw the triangle and its incircle

15. $p(x)=6x^3+3x^2$
p(-1) = 6 * -1 + 3* 1 <>0
ie, (x+1) is not a factor.
Let ax+b added
$6x^3+3x^2+ax+b = p(x)$
p(1)= a+b= -9
p(-1)= -a + b = 3
Solving a= -6, b= -3
ie, -6x- 3 to be added
OR
q(a)=k
r(a)=-k

q(a)+r(a)=k+-k=0
ie (x-a) is a factor of q(x)+r(x)

16. N= 130, N/2=65
x-600=65-41
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800-600 101-41
x-600/200=24/60

Median= 680

17. Draw the figure
18. x + 1/x=25/12

solving $12x^2$ -25x+12=0
number=4/3 or 3/4
x+1/x>=2
b^2-4ac>=0 otherwise b^2-4ac is negative

OR
let Abu complete the job in x days
Abu's work in I day=1/x
Babus work in 1 day=1/x+6
1/x+1/x+6=1/4
x^2-2x-24=0
(x-6)(x+4)=0
x=6
Abu in 6 days
Babu alone in 12 days

19.Draw Perpendicular from A to BC meets BC at D

in triangle ABD
Cos50=BD/10 (BD=6.4)
BC=12.8

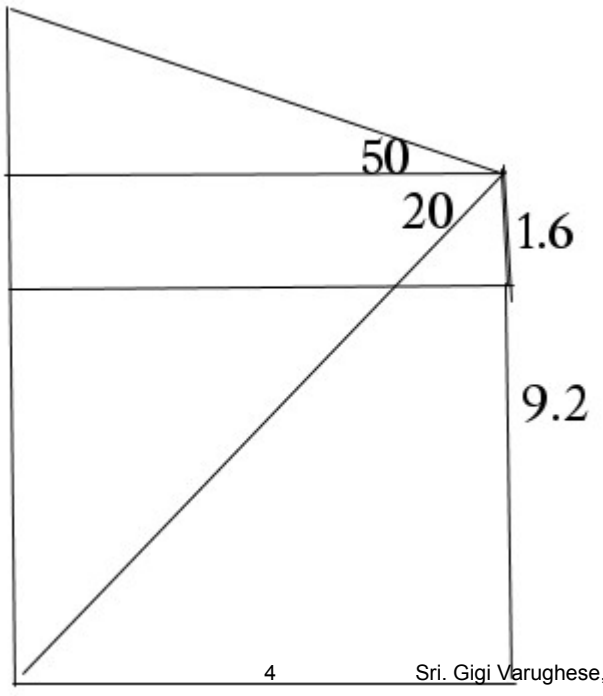
Draw diameter as angle in the same segment

Sin50=10/d

d=12.8

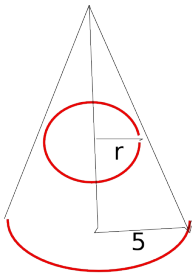
OR

d=25.5



height=9.2+1.6+30.345=41.12m

20. l=10, r=5, h=5√3
    V= 1/3*3.14*5*5*5√3
    from similar triangles



5

    5/r=10/5√3-r
    Solving r=5/√3
    Volume of the sphere=4/3* Π*5/√3* 5/√3* 5/√3
    =500 Π/9√3 cc

21. Height = 8-2=6
    Area= 15
    1/2*BC*6=15
    BC=5
    C=(3+5,2)
    C=(8,2)
22. (4,2) is point on 4x-3y-10=0(4*4-3*2-10=0)
    x=1(y=-2)
    (1,-2)
    slope=4/3
    eqn. Of line with slope 4/3 and passing through (3,5) is 4x-3y+3=0